



Staying on the Safe Side

EACH YEAR NEARLY 200,000 ADOLESCENTS SUFFER WORK-RELATED INJURIES. OF THOSE, NEARLY 70,000 REQUIRE TREATMENT IN HOSPITAL EMERGENCY ROOMS, ACCORDING TO THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH. HOW CAN VOCATIONAL EDUCATORS KEEP THEIR STUDENTS AND GRADUATES SAFE? CONSIDER A SPECIALIZED SAFETY CURRICULUM. *By John W. Diether*

These are real newspaper headlines:
Two Apprentices, 18 and 20, Fatally Burned in Electrical Fire; 17-Year-Old Killed by Faulty Power Cord

With headlines like those in local newspapers throughout the country you'd think there would be an activist army afoot marching to the call of "save our kids!"

But there's not.

Protecting youth from occupational illness and injury may not get the same media attention as campaigns against drunk driving, Joe Camel cigarette ads, drug abuse or gang violence, but it's one of the most important responsibilities a vocational educator has. Every school day—in automotive repair classes, cosmetology labs, culinary arts kitchens—vocational educators must teach safety. Not only does it prevent classroom and lab injuries, it's part of preparing students for the job.

But in a recent study by the National Institute for Occupational Safety and Health (part of the federal Centers for Disease Control and Prevention that conducts research and makes recommendations for preventing work-related illnesses and injuries), more than half of all adolescents injured in a work setting said they did not receive adequate safety and health training from either their school or their employer. The National Safety Council reports that nearly half of all occupational injuries in the United States are suffered by employees with less than one year of job experience.

In response to these staggering stats, NIOSH has developed a safety education program aimed at students and new employees. The program comprises specialized safety curriculum packages (many of which are still in the works) in such areas as cosmetology, respiratory therapy and drywall construction.

These curriculum packages may help save lives and prevent injuries. Each was developed with input from about 50 vocational teachers, administrators and trade association representatives, all of whom agreed that the ideal safety curriculum should come from a single source; be in a simple, ready-to-use format; and give primary consideration to the learning preferences of students.

Delivering the product

This school year NIOSH is field-testing its first curriculum package—"Electrical Safety." It addresses five safety themes

integral to the electrical trades: hazard identification, hazard control, personal protective equipment, safe work practices and safe working environments. The curriculum includes a manual for instructors and a condensed text of safety information for students; both include illustrations.

These materials include several classroom activities that encourage student participation and foster problem-solving skills. One such activity is the case study. Here's an excerpt from the electrical safety curriculum:

Greg, a recent high school graduate with some electrical training, decided to become an electrician. He got a job as an assistant to an electrical contractor. Since he was just learning the job, his work needed to be watched closely. Bob Mullins, a journeyman electrician with years of experience, watched Greg, who was eager to learn more about being an electrician.

One afternoon, Mr. Mullins and Greg went to a house to finish a pier lighting job. The entire job called for the installation of 10 110-volt lights along the right side of the 250-foot

pier and the installation of a 220-volt circuit along the left side. Half the lights and the 220-volt circuit already had been installed by the contractor.

Greg said he would wire the lights under the pier while Mr. Mullins installed the fixtures above. Greg jumped into the waist-deep water and waded underneath the pier to begin the work. Mr. Mullins yelled down to him, "Don't touch anything until I check to see if the circuit is shut off!"

He walked toward the boathouse to check the circuit, not realizing that the circuit breaker for the 110-volt unit was located at the main house.

As Mr. Mullins got to the boathouse, he heard a loud moan and raced to where Greg had been working. He found Greg standing in the water with his back arched, both hands on the wire stripper. Greg had tried to strip a hot wire. Mr. Mullins knocked Greg's hands loose from the wire, jumped into the water and pulled Greg's limp body onto a lower section of the pier.

The teacher's manual suggests discussion topics for the entire class and small

ENVIRONMENTALLY CORRECT

By Joan Jouzaitis and Lee MacMichael

Not only do vocational educators need to keep their students safe from lab and workplace accidents, they also must comply with federal and state environmental regulations for disposing hazardous waste materials and maintaining air quality. Vocational shops and labs—by the very nature of certain technical training—generate hazardous waste materials. Here are some basic environmental requirements and tips to help vocational educators work in an environmentally responsible manner.

Hazardous wastes

Where is hazardous waste found in your school? Think solvents, inks, paints, thinners and oils—all are waste products that may be found in automechanics shops, print shops, chemistry labs and art classrooms.

Under the Resource Conservation and Recovery Act, facilities that produce hazardous wastes must obtain an RCRA identification number from the Environmental Protection Agency. This number is used on tracking forms called hazardous waste manifests. (For details on RCRA, see www.epa.gov.)

Hazardous wastes must be kept in closed containers that are in good condition, properly labeled to identify their contents and appropriately stored. How long you can keep waste on the school site depends on how much waste your program produces and how much you store at any given time. Most schools are "small-quantity generators," producing 100 to 1,000 kilograms of hazardous waste per month. These schools are allowed to store the waste for up to 180 days in approved storage areas.

Any teacher whose work involves generating or managing hazardous waste should receive hazardous waste management training and develop emergency procedures for the classroom. The EPA's Office of Environmental Education funds a consortium of universities and nonprofit organizations that provide training to K-12 educators and state and local officials. (See www.epa.gov/enviroed/educate.html.)

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Wastewater

Do you know where the wastewater from your school goes? The regulations that apply to any school depend on that answer. There are generally three scenarios. Wastewater poured down a drain may end up: (1) in a local wastewater treatment plan (under the Clean Water Act), (2) in a local river or other body of water (which requires a National Pollutant Discharge Elimination System permit from the EPA and must be in accordance with the Clean Water Act) or (3) in the soil and ultimately the ground water underneath your facility (in which case the Safe Drinking Water Act applies). See the EPA Web site for information on each example and how to make sure your school is in compliance.

Clean air

There may be some activities in your school that require a permit under the Clean Air Act. Are you using a degreasing unit in the autobody shop? Is a boiler used for heating the building? Many schools have poorly designed or improperly maintained ventilation systems, which may lead to unhealthy air conditions. Moisture, mold, dust and asbestos also can affect indoor air quality. The EPA offers a "Tools for Schools" kit that includes several approaches to solving air quality problems. For more information about the kit, call (202) 512-1800. There also are various publications about indoor air quality that the EPA distributes for free. Call (800) 438-4318.

Preventing pollution

The best strategy is to prevent pollution rather than manage it. By making sound environmental choices, schools can save money, improve their environmental compliance rates, eliminate hazards, minimize potential liabilities and train more marketable students. Some pollution prevention projects may be costly at first but are worth the investment in the long run. For example, schools that keep accurate chemical inventory records can prevent a surplus of materials and save on disposal costs.

A few tips

Environmental regulations may vary from state to state, but here are a few tips all educators can benefit from:

- Choose one person to be in charge of all the environmental issues at your school.
- Always use common sense. Buy only chemicals you intend to use, and take care when accepting donations. Disposing of certain chemicals may prove costly.
- Make sure the ventilation system in your school is turned on, cleaned and maintained on a regular basis. Make sure its design effectively ventilates work areas.
- Get your students involved where appropriate. Teaching them about environmental regulations will help them make informed decisions in the workplace and make them more marketable graduates. The EPA offers free curriculum activities on its Web site at www.epa.gov/teachers/curriculum_resources.htm.
- Choose raw materials that are least hazardous for the job.
- Store your chemicals according to chemical class, not in alphabetical order. Certain chemical combinations can explode, start a fire or create other unsafe conditions.
- Take advantage of free assistance offered by local, state and federal agencies. The EPA administers State, Local and Tribal Environmental Networks (SLATE Networks). See www.epa.gov/regional/statelocal/training.htm for more than 20 links to various training centers, environmental sites and downloadable software like "Pollution Prevention Tools for Farms and Ranches."

As members of the EPA's New England Environmental Assistance Team (Boston, Mass.), Joan Jouzaitis and Lee MacMichael help vocational-technical schools comply with environmental regulations by conducting workshops for teachers and administrators. Contact Jouzaitis at (617) 918-1846 or Joan@epamail.epa.com. Contact MacMichael at (617) 565-1847 or MacMichael.Lee@epamail.epa.com.

groups. These topics include technical safety issues as well as the social and economic costs of injuries. The curriculum is supplemented by color overheads and posters that present safety information in an interesting and easy-to-read format, as well as a video of safety scenarios. Multiple-choice quizzes also are included for assessment.

Cash incentive

In another effort to spread the word about classroom and lab safety, NIOSH sponsors an annual awards program with the American Vocational Association. The School Lab Safety Award recognizes a project that promotes safety and health in vocational-technical education. The author of the winning entry receives \$750 and the author's school receives \$250.

The 1998 winner was Larry Walden, a plastics manufacturing instructor at Tri County Technology Center in Bartlesville, Okla. Walden published *Safety 1st—Plastics Manufacturing Technology Student Safety Handbook*, a comprehensive guide covering everything from eye and face protection to first aid procedures to fire drills and tornado warnings. The handbook also includes a safety pledge students must sign before starting the course. Entries for the competition are due to AVA in November. Judges from AVA and NIOSH review the entries and select a winner in January. The winner is invited to receive the award in March at AVA's National Policy Seminar in Washington, D.C. (For more information about the School Lab Safety Award, contact AVA at (800) 826-9972.)

NIOSH also is in the process of publishing a series of guidelines for school administrators. Scheduled for release late this year, these guidelines will help administrators keep school facilities in compliance with Occupational Safety and Health Administration and Environmental Protection Agency requirements. (For more on the EPA, see "Environmentally Correct" on page 31.)

NIOSH encourages teachers and administrators to participate and contribute to its education projects, particularly the safety curricula it still is developing for various vocational-technical subjects. To participate in a project, call NIOSH at (800) 35-NIOSH. 

John Diether is a scriptwriter and producer at NIOSH. For more information about the institute, visit www.cdc.gov/niosh.

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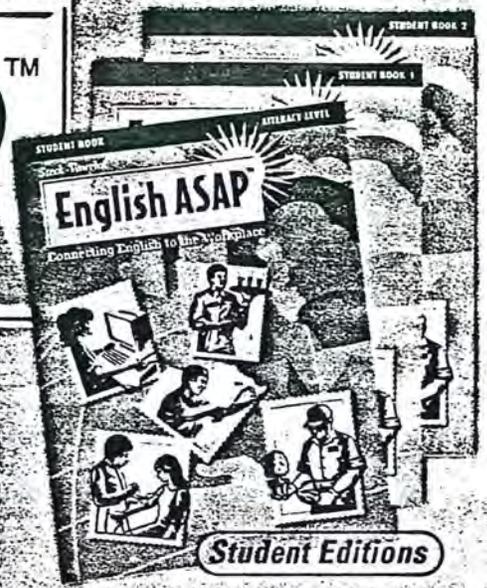
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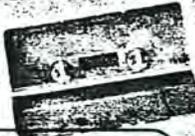


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